



Spectral Gamma-Ray Borehole  
Log Data Report

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Borehole

40-08-06

Log Event A

### Borehole Information

Farm : <u>S</u>	Tank : <u>S-108</u>	Site Number : <u>299-W23-163</u>
N-Coord : <u>35,979</u>	W-Coord : <u>75,767</u>	TOC Elevation : <u>664.24</u>
Water Level, ft :	Date Drilled : <u>11/30/1971</u>	

### Casing Record

Type : <u>Steel-welded</u>	Thickness : <u>0.280</u>	ID, in. : <u>6</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>100</u>	

### Borehole Notes:

This borehole was drilled in November 1971 and was completed to a depth of 100 ft with 6-in.-diameter casing. The driller's log contains no mention of perforations or grout. The casing thickness is assumed to be 0.280 in., on the basis of published thickness for schedule-40, 6-in. casing. The zero reference for the SGLS logs is the top of the casing, which is even with the grade.

### Equipment Information

Logging System : <u>2</u>	Detector Type : <u>HPGe</u>	Detector Efficiency: <u>35.0 %</u>
Calibration Date : <u>05/1996</u>	Calibration Reference : <u>GJPO-HAN-5</u>	Logging Procedure : <u>P-GJPO-1783</u>

### Log Run Information

Log Run Number : <u>1</u>	Log Run Date : <u>06/25/1996</u>	Logging Engineer: <u>Alan Pearson</u>
Start Depth, ft.: <u>99.5</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>6.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>
Log Run Number : <u>2</u>	Log Run Date : <u>06/26/1996</u>	Logging Engineer: <u>Alan Pearson</u>
Start Depth, ft.: <u>0.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>7.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>
Log Run Number : <u>3</u>	Log Run Date : <u>06/26/1996</u>	Logging Engineer: <u>Alan Pearson</u>
Start Depth, ft.: <u>75.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>60.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>



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## Analysis Information

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Analyst : D.L. Parker

Data Processing Reference : P-GJPO-1787

Analysis Date : 04/10/1997

### Analysis Notes :

This borehole was logged in three log runs using a centralizer. One of the log runs was conducted as a quality check by relogging a section of the borehole. The pre- and post-survey field verification spectra for all three log runs met the acceptance criteria established for peak shape and system efficiency. The energy and peak-shape calibration from the appropriate field verification spectra that best matched the logging data were used to establish the channel-to-energy parameters used in processing the spectra acquired during the log runs.

Casing correction factors for a 0.280-in.-thick casing were applied during the analysis.

Cs-137 was the only man-made radionuclide detected in this borehole. Cs-137 contamination was detected intermittently from the ground surface to a depth of 4 ft, at 17.5 ft, and at the bottom of the borehole. The maximum Cs-137 concentration detected within the borehole was about 0.3 pCi/g at a depth of 2 ft. A higher concentration was detected at the ground surface, but this is an apparent concentration because the borehole-to-detector geometry does not match the source-to-detector geometry used in system calibration.

The K-40 concentrations increase slightly below about 46 ft. The logs of the naturally occurring radionuclides show an increase in concentrations at a depth of about 57 ft.

As an additional quality check, the depth interval from 60 to 75 ft was relogged.

Details concerning the interpretation of data for this borehole are presented in the Tank Summary Data Reports for tanks S-108 and S-111.

### Log Plot Notes:

Separate log plots show the man-made and the naturally occurring radionuclides. The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations.

A combination plot includes the man-made and natural radionuclides, the total gamma derived from the spectral data, and the Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma logs to coincide with the SGLS data.

A plot of the rerun segment includes KUT concentrations from both the original log runs and rerun sections over the depth interval from 60 to 75 ft.

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the MDL. The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.